

17655

15162

3 Hours / 100 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Illustrate your answers with neat sketch wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data, if necessary.
(5) Abbreviations used convey usual meaning.

Marks

1. a) Answer any THREE of the following 12
(i) Explain in need of plastic waste management.
(ii) Enlist different sources of plastic waste. Explain any one.
(iii) How is incineration process used for energy recovery?
(iv) Differentiate between primary and secondary recycling.
- b) Answer any ONE of the following: 6
(i) Explain the process of sorting based on density and wettability method with a diagram.
(ii) (1) List down the advantages of biodegradable plastics.
(2) Compare biodegradable plastic with conventional plastic.
2. Answer any FOUR of the following: 16
a) Accumulation of waste is hazardous to environment. Justify.
b) Explain chemical recycling of Nylon by Pyrolysis.
c) Name the types of pollution. Write ways to control the pollution.
d) Draw the flow sheet of different ways of management of waste plastic.

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- e) Explain process of land filling.
- f) Elaborate the meaning of:
 - (i) Waste
 - (ii) Waste management

3. Answer any FOUR of the following: 16

- a) Which product do you get from pyrolysis of PE, PP, PVC? Explain.
- b) Explain sorting process by chemical dissolution method.
- c) State the selection criteria for land filling site.
- d) Explain with example solvolysis.
- e) Write down collection and separation system for:
 - (i) Agricultural film
 - (ii) Polystyrene foam packaging

4. a) Answer any THREE of the following: 12

- (i) Write down reaction for:
 - (1) Methanolysis of PET
 - (2) Hydrolysis of PET
- (ii) Explain injection moulding for melt processing of plastic waste.
- (iii) Give examples of different starch based biodegradable plastics. Write their applications.
- (iv) Explain two methods for collection of plastic waste.
- (v) Explain electrostatic separation process.

b) Answer any ONE of the following: 6

- (i) Define recycling. Explain in brief physical and chemical recycling.
- (ii) Why are plastics material in general are not susceptible to biodegradation? State different additives used for making a plastic biodegradable?

5. Answer any FOUR of the following:**16**

- a) Explain biodegradable plastics polyester.
- b) State any four advantages and limitations of recycled plastics.
- c) Enlist different enzymes used for biodegradation with their functions. Name plastics, so degraded.
- d) Explain mechanism of biodegradation.
- e) Write different additives used for improving properties of recycled plastics.
- f) Explain recycling of polyolefin waste.

6. Answer any FOUR of the following:**16**

- a) Explain the meaning of degree of biodegradability.
 - b) Describe a method to measure resistance of plastic to fungi.
 - c) Explain sinter moulding process.
 - d) Describe recycling of an elastomeric waste.
 - e) Describe chemical recycling of commodity plastic waste of PVC.
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